

MULTIFUNCTION LIDS FOR CLOSING RECEPTACLES, TYPICALLY
PAINT POTS

DESCRIPTION

Domain of the invention

The invention relates to closure of receptacles containing typically fluid products that can be applied manually using an instrument, and typically paint pots, protective mixes or coloured coatings, or varnishes or
5 adhesives that can be applied using a brush or a roller.

The following description refers to paint pots simply as a typically example of the domain of this invention.

10 State of the art

Commercially available paint pots are usually formed by a body with an opening at the top forming a rim closed by a lid that click fits into the rim, the only way for the pot to be opened is to separate the lid from the rim,
15 typically using a tool such as a screwdriver.

However, there are patents that describe paint pot lids that in particular are easier to open and may provide additional functions.

Thus, patent GB 2 205 082-A describes a lid
20 comprising lines of weakness capable of forming an edge at the time of the first opening, on which the brush can be wiped.

Furthermore, there are many patents related to accessories adaptable to paint pots to facilitate their use, including two types of accessories:

- 5 - firstly, "standard" pots may include accessories to facilitate application of the paint, for example as described in patents US 5 730 331 or 3 298 561,
- 10 - secondly, these accessories may be independent of the paint pots and can be used by putting them on paint pots after opening, as described in patents US 4 240 568, US 5 195 662, US 4 009 802, US 6 213 338, US 5 853 107, US 3 596 813, US 3 400 867, US 4 911 319, and US 4 247 013.

15 Problems that arise

Although the state of the art includes a large number of manufactured products, this state of the art leaves a number of problems unsolved, since although every manufactured product is designed to solve a particular problem, it leaves another problem unsolved or worse it may itself introduce a new problem.

Concerning accessories, they should be considered to form complementary parts with a cost additional to the cost of the "standard pot", although it is true that other specific functions are added.

Providing an accessory for each paint pot is a very expensive solution, but not providing it and using a specific accessory is not a practical solution to the extent that, like all objects only used occasionally,

special accessories unfortunately have a nasty habit to get lost!

Furthermore, concerning the functions provided by known lids, for example as described in patent
5 GB 2 205 082-A, they are very limited because they mainly concern the possibility of wiping the brush.

The purpose of the invention is a lid for pots that simultaneously:

- 10 - is not an accessory and therefore performs the sealed closure function of the pot, such that the total cost is very little different from the cost of a "standard pot",
- includes several of the functions required by the user and particularly at least three of the means
15 or functions described below in a) to g), and possibly other functions as will become clear later:
 - a) means of facilitating pouring paint from the receptacle,
 - 20 b) means of opening the receptacle without the use of tools,
 - c) means of reopening and reclosing the receptacle at will,
 - d) means of wiping the brush,
 - 25 e) means of stacking pots and lids,
 - f) means of recovering the product and preventing unwanted dripping,
 - g) means of manual gripping.

- be compatible with industrial manufacturing of lids and receptacles, particularly paint pots, the lids typically being stored in a stack, with their use in the paint industry (closure of pots filled with these lids) and also with the storage of pots once they have been filled.

Description of the invention

The lid according to the invention will close a receptacle, typically intended to contain a fluid product such as a paint or a powder, to be applied manually using an instrument such as a brush, the said receptacle comprising a body provided with a bottom, a skirt with an upper rim delimiting an upper opening with area S typically varying from 25 cm^2 to 2500 cm^2 and with its largest dimension D typically varying from 5 cm to 50 cm , and designed to be closed off by the said lid.

This lid is characterised in that:

- a) the said lid comprises a dish with area S' and its largest diameter D' and a peripheral strip fixed to the said dish and provided with an outer edge cooperating in a sealed manner with the said upper ring, the said area S' typically varying from $0.1S$ to $0.9S$ and the said largest dimension D' typically varying from $0.1D$ to $0.9D$,
- b) the said dish comprises a sidewall and a bottom, a part of the said wall forming a pouring spout with height H above the said peripheral strip, so as to facilitate pouring of the said product,

c) the said bottom comprises an orifice or a recess delimited by a rim and forming an opening with area S'' and its largest dimension D'' , the said area S'' typically varying from $0.1S'$ to $0.9S'$ and the said largest dimension D'' typically varying from $0.1D'$ to $0.9D'$ so as to enable passage of the said instrument,

d) the said lid comprises a manually removable closing means, typically a cap, designed to close off the said orifice, so as to be able to manually close or open the said orifice as many times as necessary, typically by rotation of the said removable closing means.

The combination of means a) to d) according to the invention solves the problems that arise. This combination of means firstly:

- facilitates pouring from the receptacle, due to the presence of a pouring spout,
- enables the receptacle to be opened without the use of tools due to the presence of a manually removable closing means,
- enables the receptacle to be reopened and reclosed at will using this same removable closing means (means c),
- recovers the product and eliminates unwanted dripping of this product, due to the presence of a dish around the orifice.

As will become clear later, this combination of means also makes it possible to form means providing complementary functions.

The invention also provides an economic solution
 5 adapted to the general consumer market typically represented by the paint pot market.

Finally, the invention provides a completely new solution to the domain of lids for paint cans, pots or buckets, and opens up the way for a wide variety of
 10 practical embodiments as will become clear from the detailed description of the invention and the figures that accompany it.

Description of the figures

15 Figure 1a diagrammatically shows an axial sectional view along the axis of symmetry (15), of a body (2) of a receptacle on which a lid (1) according to the invention will be fitted. This body (2) comprises an upper rim (23) shown in an enlarged view with a portion of skirt (21) in
 20 the rectangle shown in chain dotted lines. The upper rim (23) of figure 1A shows a flat outer upper rim (230).

Variants of the upper rim (23) corresponding to the part inside the rectangle shown in chain dotted lines in Figure 1A, are shown in figures 1b to 1g.

25 Figure 1b shows a plane inner rim (233).

Figure 1c shows an inclined outer rim (231).

Figure 1d shows an inclined inner rim (234).

Figure 1e shows a rolled outer rim (232).

Figure 1f shows a rolled inner rim (235)

Figure 1g shows a rim with an intermediate part (24) with a rolled inner edge.

Figures 2a to 2h show partial axial sections that diagrammatically represent the sealed cooperation between
5 the said upper rim (23) and an outer edge (50) of the lid (1), the views shown substantially corresponding to the part located in the rectangle shown in chain dotted lines in Figure 1a.

Figures 2a, 2c, 2e and 2g at the left show the said
10 upper rim (23) and the said outer edge (50) before cooperation, while the corresponding figures 2b, 2d, 2f and 2h at the right show sealed cooperation between the said upper rim (23) and the said outer edge (50).

In figures 2a and 2b, the said cooperation is made
15 by crimping, the outer edge (50) forming a crimping hook (53) including a seal (54).

In figures 2c and 2d, the said cooperation is made by click fitting, the said outer edge (50) comprising a click fitting hook (52).

20 In figures 2e to 2h, the said cooperation is made by bonding or sealing or heat sealing, either because the said outer edge (50) comprises or forms an adhesive layer (55) like that shown in figures 2e and 2f, or because the upper rim (23) itself includes or forms an adhesive layer
25 (26), the said adhesive layer possibly consisting of a varnish coating the said lid (1) and/or the said body (2).

Figures 3a and 3b correspond to Figures 2a to 2h, and illustrate the case of cooperation between an outer

edge (50) comprising a click fitting hook (52) and an upper rim (23) forming a plane outer rim (230), the two materials forming the outer edge (50) and the upper rim (23) possibly being sealed to each other, typically using heating jaws applying a pressure as shown by the arrows in figure 3b.

Figure 3c corresponds to Figure 3a, and illustrates the case of cooperation between an outer edge (50) comprising a click fitting hook (52) and an upper rim (50) comprising an intermediate part (24) comprising an inner rolled edge and a seal (25).

In figures 1a to 3c, the bodies of receptacles (2) or metal lids (1) are shown in thin lines, while the plastic lids (cases in Figures 2c to 2h and 3a to 3c) are shown in thick lines.

Figures 4a to 6c are diagrammatic top views of lids (1) - without the caps (6) - so as to illustrate typical lid shapes:

- external shapes or peripheries corresponding to the shapes of the outer edge (50), and to the shapes of the upper rims (23) of the bodies of the receptacles (2) to be closed, are illustrated in figures 4a, 5a and 6a corresponding to rectangular, round or oval shapes respectively. These peripheries delimit a surface S with largest dimension D;
- external shapes or peripheries of a dish (4) are shown in a dark line on the corresponding figures

4b, 5b and 6b. These peripheries delimit an area S' with largest dimension D';

5 - shapes or peripheries around the orifice (43) delimited by rims (44) are shown on the corresponding figures 4c, 5c and 6c. These rims (44) that delimit an area S" with largest dimension D" are designed to cooperate with caps with a corresponding shape (6) not shown on the figures. In these Figures, the pouring spout (41) is shown particularly with an inclined inner surface (410).

Figure 4c illustrates the case of an orifice (43) in which the rim (44) forms arcs with three different radii of curvature R1, R2 and R3.

15 Figure 4d is an axial sectional view corresponding to Figure 4c.

Figure 5c illustrates the case of an orifice (43) partly closed off by a support plate (49) comprising lateral orifices (490) so as to click fit brushes in the vertical position, particularly during a short term interruption of their use.

Figure 7a to 7d illustrate an embodiment of the lid (1) in which the dish (4) and the peripheral strip (5) form a moulded part or a single piece thermoformed part.

25 Figure 7a shows a top view of the lid (1), its cap (6) being closed.

The wall (40) of the dish (4) is shown in a thick line, with a full line for the "top" part (400) and a dashed line for the "bottom" part (401). The auxiliary

stacking means (80) is shown in a thick full line, and forms a upper horizontal plane (81) with the said "top" part (400), in particular so that lids can be stacked as illustrated in Figure 8a.

5 Figure 7b shows a side view of the lid (1) in Figure 7a.

Figure 7c shows a section along the vertical plane A-A in Figure 7a.

Figure 7d shows a view corresponding to Figure 7c
10 but with the cap (6) open, only part of the said cap being represented.

Figure 8a shows an axial sectional view through a stack (3) of lids (1) similar to those in Figure 7c, so as to illustrate stacking of lids (1).

15 The lids (1) in Figure 8a include a flexible tab (61) acting as a permanent fixing means (60), forming a single piece with the wall (40) of the dish (4) according to a first embodiment - or a flexible tab (62) assembled by bonding to the wall (40) according to a second
20 embodiment.

Figures 8b and 8c are partial axial sections illustrating means of cooperation of removable closing means or caps (6) with the rim (44) of the orifice (43).

In Figure 8b, the orifice (43) is closed off by a
25 closer (9) provided with a gripping tab (91) heat sealed on the upper surface (441) of the inner projection (440) of the rim (44). A cap (6) provided with a click fit means (65) with a male part (650) cooperates with the click fit means (45) comprising a female part (450) on

the upper part of the rim (44) of the orifice (43), so as to close off the orifice in a sealed manner after the closer (9) has been removed the first time that the lid (1) is opened.

5 In Figure 8c corresponding to Figure 8b, the closer (9) is sealed on the lower surface (13) of the lid, the closer including a line of weakness (90) such that simple pressure with a brush along the movement indicated by the arrow tears off the closer (9) along its line of weakness
10 that goes around most of the said rim (44), the closer remaining fixed inside the body (2) to the non-torn part of the closer to prevent unwanted dripping.

Furthermore in Figure 8c, the cap (6) includes an annular seal (68).

15 Figures 9a to 12c show partial diagrammatic views of lids (1) on which the cap (6) is not shown, these lids being formed by an assembly of a dish (4), typically made of a moulded or thermoformed plastic material with a typically stamped metallic peripheral strip (5) made of
20 tinplate, aluminium, etc.

Figures 9a to 9c show similar axial sections that illustrate three assembly embodiments of the dish (4) and the peripheral strip (5) to form a sealed annular junction (11).

25 In Figure 9a, the junction 11 is formed by insert moulding of the dish on the inner edge (51) of the said peripheral strip (5), the said inner edge (51) thus being embedded in the outer projection (48).

In Figure 9b, the junction (11) is formed by sealing or heat sealing the inner edge (51) on the upper surface (480) of the outer projection (48).

This Figure 9b shows a portion of tab (61) fixing
5 the cap (6) - not shown - to the dish (4) and forming a single piece part with this dish.

In Figure 9c, the junction (11) is formed by sealing or heat sealing the inner edge (51) on the inner surface (481) of the outer projection (48). According to the
10 embodiment shown in this Figure, a closer (9), typically heat sealed, covers the inside part of the inner surface (13) of the lid and particularly the said junction (11).

Figure 9c shows an axial section along the vertical plane D-D of Figure 9d, which is a partial top view.

15 In figures 9a to 9d, the said vertical positioning means (7) and the stacking means (8) are formed by an arc-shaped deformation - typically by stamping - of the said peripheral strip (5) so as to obtain a top stacking plane (81).

20 Figures 10a and 10b are simplified versions of Figure 9d that show lids comprising the same dish (4) assembled to different peripheral strips: the peripheral strips denoted (5) in Figure 9d, (5') in Figure 10a and (5'') in Figure 10b all have a different shape or surface
25 area.

Figures 11a to 11c diagrammatically illustrate other embodiments of lids (1). Figures 11a and 11b correspond to Figure 9c particularly concerning assembly of the peripheral strip (5) and the dish (4).

Figures 11a and 11b show lids (1) for which the cap (6) is fixed to the auxiliary stacking means (80), and typically forms a single piece part with this stacking means.

5 Figures 11b and 11c show the same embodiment of the lid, Figure 11c being a top view and Figure 11b being an axial view along the vertical plane C-C in Figure 11c.

Figure 11a illustrates two embodiments of lids (1):

- 10 - according to a first embodiment, a sealing layer (84) makes the auxiliary stacking means (80) - a parallelepiped shaped element made of plastic, fixed to the upper surface of the peripheral strip (5), a flexible tab (62) making the cap (6) fixed to the stacking means (80). In this case, the cap
- 15 (6) can be opened by pulling on the tab (67).
- according to a second embodiment, the sealing layer (84) is missing, the stacking means (80) is then fixed to the cap (6) by a typically rigid arm (83). In this case, neither the cap (6) nor the
- 20 stacking means (80) are fixed to the lid (1) since there are separated from it when the cap (6) is opened, for example by pulling on the stacking means (80).

25 According to Figure 11b, as in the second embodiment of Figure 11a, the stacking means (80) and the cap (6) are fixed by a typically rigid arm (83), but in this case, the cap (6) is fixed to the dish (4) by a hinge (10), such that the cap (6) is opened by pulling on the stacking means (80) as illustrated by an arrow. The top

part of the stacking means (80) forms the vertical positioning means (7), this part resting on the peripheral strip (5) of the lid once the cap (6) has been opened.

5 Figures 12a and 12b correspond to Figure 9c, and diagrammatically show a lid (1) but which is different from the lid in Figure 9c by several distinct elements, shown together on the same Figure to avoid an excessive number of Figures:

- 10 - firstly, the stacking means (80) is fixed to the dish (4) by a tab (85),
- secondly, the stacking means (80) includes a manual gripping means, for example an orifice (800) through which at least one or several
- 15 fingers can pass, as illustrated in Figure 12c,
- the said pouring spout (41) also comprises a bi-stable tab (412) due a thinned part (411) with an appropriate radius of curvature R. The tab (412) is shown folded down in Figure 12a and extended in
- 20 Figure 12b.
- finally Figures 12a and 12b illustrate an embodiment of the cap (6) in which the hinge (10) is located in the said dish (4) and has an upper opening, such that the said cap can be click
- 25 fitted by an axial movement as shown by an arrow in Figure 12a representing the cap (6) in the closed position, while the cap is in the open position in Figure 12b, the cap (6) being held in its vertical position typically by click fitting

or a vertical positioning means (600) fixed to the cap (6) into a recess (405) formed in the sidewall (40) of the dish (4), particularly so as to offer its inner surface (66) as a surface for wiping the said instrument. Figure 12b shows a double arrow showing the possibility of separating the cap (6) from the lid (1), the cap (6) being in the open position, and then once again assembling it to the lid by reversible click fitting.

Figure 12d shows a partial top view showing the connection of the tab (412) and the inclined inner surface (410).

Figures 13a and 13b illustrate another embodiment of the lid (1).

Figure 13a corresponds to Figure 7a and applies to the case of a stack of receptacles fitted with lids according to the invention, and shows cooperation between a lid (1) and a bottom (20) of which the support edge (201) (typically a crimping bead like that shown in Figure 13b) is represented by two concentric circles in dashed lines, so as to provide radial blockage for all receptacles forming the said stack, the said radial blockage being done by at least three radial contact areas; two radial stops (82) forming the ends of the auxiliary stacking means (80) and one radial stop (402) formed by the outermost edge of the dish (4) or its external projection (48).

Figure 13 shows an axial section through a bottom (20) of the receptacle body (2) placed on top of a lid (1).

Figures 14a to 14c illustrate another embodiment of the lid (1) corresponding to that shown in Figure 9b.

Figure 14a is a top view, while Figures 14b and 14c are axial sections.

In this embodiment of a lid (1), the removable closing means comprises a closing cap forming a drawer (403), two parallel sides of the wall (40) being fitted with slides (403) along which the drawer translates along the direction of the arrows in Figures 14b and 14c.

The drawer (403) is closed in Figures 14a and 14b, while it is partially open in Figure 14c. A closer (9) is heat sealed onto the inner projection (440) of the rim (44).

Detailed description of the invention

According to one preferred embodiment of the invention, the said removable closing means (6) may comprise a means of fixing (60) to the said dish (4) or to the said peripheral strip (5), the said fixing means being either permanent or removable.

Depending on the case, it may be advantageous for this closing means (6) to be inseparable from the lid (1) (unless it is deliberately separated) so as to eliminate the risk of it falling off or getting lost.

However, as illustrated by the second embodiment in Figure 11a, some embodiments of lids (1) may not include fixing means (60).

As illustrated in Figures 12a and 12b, some
5 embodiments of lids (1) may include a removable fixing means, the said closing means (6) possibly being temporarily separated from the said lid (1).

This fixing means (60) may be permanent and include a flexible tab (61) typically forming a single piece part
10 with the said dish (or with the said peripheral part (5)) as illustrated in Figure 8a according to the first embodiment, and Figure 9d.

According to another embodiment, the said fixing means (60) may include a flexible tab (62), or a rigid
15 arm (63), fitted with an end (64) comprising means of cooperation (65) with the said dish (4) or with the said peripheral strip (5), typically by bonding or click fitting, so as to form a permanent or typically removable fixing means depending on the case.

20 Bonding, as a permanent fixing means, was illustrated by the second embodiment in Figure 8a and the first embodiment in Figure 11a.

Click fitting as a possible removable fixing means was illustrated in Figures 12a and 12b.

25 As illustrated in Figures 7c and 11b, and in Figures 12a and 12b, the said click fitting means forming the said cooperation means (65) includes male or female parts, one being fixed to the said removable closing

means (650), the other (450) being fixed to the said dish (4) or the said peripheral strip (5).

Preferably, as illustrated in Figures 7c, 11b and 12b, the said fixing means (60) can form a hinge (10) for
5 the said cap (6).

Advantageously, this hinge (10) may be formed by simple axial click fitting of the cap (6) in the dish (4).

According to the invention and as illustrated for
10 example in Figure 7d, the said dish (4) or the said peripheral strip (5) or the said cap (6) may include a horizontal positioning means (7), typically a stop, such that when the said cap (6) is open, its inner surface (66) forms a typically horizontal plane (70) and this
15 avoids running of the said product sticking to its inner surface.

However, the disadvantages related to this type of run are also avoided when the hinge is located in the dish, as illustrated in Figures 12a and 12b, and thus any
20 drips or running from the lid can return into the said product to avoid any loss and unwanted dripping.

According to the invention and as illustrated in Figures 12a and 12b, the said dish (4) may typically form a vertical positioning means, typically due to the said
25 sidewall (40), or it may possibly be inclined at an angle $> 90^\circ$ such that when the said cap (6) is open, its inner surface (66) forms a vertical or inclined plane, enabling the product to flow towards the said orifice and also providing a wiping surface for the said instrument.

According to another embodiment of the lid according to the invention shown in Figures 14a to 14c, the said sidewall (40) of the dish (4) may include parallel slides (403) and a recess (404) to enable translation of a
5 drawer sealing means (69) comprising a handle on the outside of the said dish.

Preferably, the drawer sealing means (69) comprises an overthickness at its end with fairly low strength so that it can be inserted into the recess (404) at the
10 bottom of the wall (40), but strong enough to prevent it from being separated from the said wall (40) when it is opened.

Regardless of the embodiments of the invention and as illustrated in Figures 7d to 8c, the said dish (4) may
15 include a bar typically passing through the said orifice (43) so as to form a wiping bar (46) for the said instrument.

This wiping bar (46) may form a partition of the said orifice (43), a main part (430) of the said orifice
20 being intended for passage of the said instrument, a secondary part (431) adjacent to the said pouring spout being designed to allow flow of the said product when the said product is transferred.

The said secondary part (431) may have a typically
25 triangular section with a vertex forming part of the said pouring spout (41) as illustrated in Figure 5c, in which the wiping bar (46) does not appear.

As illustrated in Figure 8b, the said secondary part (431) may be closed off by a possibly removable grid (47).

According to the invention, the height H of the said
5 part of the sidewall (40) forming the said pouring spout (41) may vary from 5 mm to 30 mm and typically be located at a distance d from the said upper rim (23) varying from 1 to 50 mm, and typically varying from 5 to 15 mm. See Figure 9c or 12b.

10 As illustrated in Figures 12a to 12d, the said pouring spout (41) may include a bi-stable flexible tab (412) in the folded down position when the said lid (1) or the said receptacle fitted with the said lid forms a stack, in the extended upwards position so that the said
15 product can be transferred, the said pouring spout (41) having a thinned upper end (411), with a flexibility and radius of curvature R adapted so as to obtain a tab (412) with two stable positions, so that when the said tab is extended, the height $H' > H$ and is equal to at least
20 1.30 H.

This radius of curvature R will typically vary from 30 mm to 100 mm.

Preferably, and as illustrated in many Figures (4c, 5c, 6c, 7a, 7b, etc.), the part of the said wall (40)
25 forming the said pouring spout may include an inner surface (410) forming an angle of less than 90° with the horizontal plane, for example the average horizontal plane (12), and typically varying from 45° to 75° , to facilitate transfer of the said product.

Depending on the embodiment of the lid (1), the said sidewall (40) may include a so-called "top" part (400) with height H comprising the said pouring spout (41), the said wall having a length or size L, so as to form a
5 stacking means (8) of the said lid forming a thickness shim for stacking the said lid in a stack (3) and / or the said receptacle in a stack after it has been filled and closed by the said lid.

The said wall (40) may include a so-called "bottom"
10 part (401) with height H, particularly to enable or facilitate the said rotation or access to the said orifice (43).

In the Figures, the said upper part (400) has been shown by a continuous thick line, while the lower part
15 (401) is shown by a discontinuous dark line, as can be seen in Figures 7a, 9d, 10a, 10b and 13a.

Typically, the said bottom (42) may be a bottom (420) inclined towards the said rim (44) like a funnel, such that the said fluid product that drops inside the
20 said dish (4) or onto the said bottom (42) can flow by gravity towards the said orifice (43) and thus drop into the said body (2).

As illustrated in many Figures, and for example particularly in Figures 8b, 8c or 14b, the said rim (44)
25 may comprise an inner projection (440) delimiting the said orifice (43), so as to typically cooperate with the said cap (6) particularly by forming an axial and / or radial stop for the said cap (6).

As illustrated in Figure 4c as an example, the said orifice (43) may have a horizontal profile or periphery comprising at least one straight portion and at least two angular portions with radii of curvature R1 and R2, such that the said rim and / or the said projection may be used as a wiping means for a flat brush and for two round brushes with radii of curvature typically equal to approximately R1 and R2 respectively, where R1 and R2 typically vary from 5 mm to 50 mm.

According to the invention, and particularly when the said dish (4) has a surface area S' very much less than S and typically where $S/S' > 2$, or when the said dish (4) is offset by a maximum amount with respect to the lid (1), the said peripheral strip (5) may include an auxiliary stacking means (80) for the said lids (1), typically formed by one or several pads or elements in relief, typically with the same height H above the said peripheral strip (5) as the height of the said top part (400) or the said pouring spout (41) and at a distance equal to at least D/2 from the said pouring spout in an average horizontal plane of the said peripheral strip, such that in particular the said lids (1) can be put into a stable stack (3) of lids (1) or receptacles (2) fitted with the said lids.

When the dish has a large surface area S' compared with the surface area S of the lid, and is also well centred with respect to the lid - for example Figures 5c or 6c, there is no need for an auxiliary stacking means

(80) to stack the lids (1) or receptacles fitted with these lids.

However if this is not the case, as shown in Figures 7a, 9a to 9d, 10a to 13a, it is preferable to include an auxiliary stacking means (80) in the lid (1).

As shown in Figures 7c and 7d, it is preferable if the said auxiliary stacking means (80) can also form the said vertical positioning means (7).

Typically, the said upper part (400) of the said dish and the said element in relief (80) may have the same height H, so as to give an upper stacking plane (81) that is horizontal, the said height H typically being chosen to be equal to at least the depth H' of the said hollow outer part (200), and form or comprise at least three parts at their periphery or radial end forming the radial stops (402, 82) that will cooperate with the said outer hollow part, so as to prevent any radial displacement of one receptacle with respect to another in a stack and thus increase its stability.

As illustrated in Figures 7a to 10b, the said element in relief (80) and the said peripheral strip (5) may form a single piece part, typically either because as in the case in Figures 7a to 8a, the element in relief forms a projection that is moulded or thermoformed at the same time as the said peripheral strip, or because as in the case in Figures 9a to 10b, the element in relief (80) is obtained by local deformation of the said peripheral strip, for example by stamping when the said peripheral strip (5) is metallic.

As illustrated in Figures 12a and 12b, the said element in relief (80) and the said dish (4) may form a single piece part.

As illustrated in Figures 11a to 11c, the said
5 element in relief (80) and the said cap (4) may form a single piece part.

According to one embodiment of the invention illustrated for example in Figures 7a to 8c, the said dish (4) and the said peripheral strip (5) may form a
10 single piece part, typically a plastic moulded or thermoformed part.

According to another embodiment illustrated particularly in Figures 9a to 12b, the said dish (4) and the said peripheral strip (5) may form two parts fixed by
15 an assembly means, typically using an external projection (48) from the said dish (4), so as to form a typically sealed junction area (11).

Typically, the said dish (4) may form a part made of plastic, and the said peripheral strip (5) may form a
20 metallic or annular metalloplastic part with an inner edge (51) fixed to the said dish (4) or to the said outer projection (48), typically by crimping, bonding, click fitting or insert moulding.

But it is also possible to form elements of the lid
25 either made from a plastic material by moulding or thermoforming or based on metal, and to assemble them typically by heat sealing.

Plastic elements such as polyolefin (for example PE, PP) may be heat sealed to each other in the same way as a

metal based material, typically a PE / metal / PE type of multiple layer, the outer layers or PE or thermoplastic material then enabling assembly by heat sealing. Elements of the lid can also be assembled by bonding, due to the
5 addition of an adhesive between the elements to be assembled.

However when the said dish (4) and the said peripheral strip (5) are composed of different materials, it is advantageous if the said assembly means forming the
10 junction (11) is a reversible assembly means, so as to enable subsequent separation of the said dish (4) and the said peripheral strip (5) to enable recycling of the materials from which the said lid is made.

This can be achieved by solidarising the said dish
15 (4) and the said peripheral strip (5) at a predetermined mechanical force F (for example these two elements can be separated by applying a tension force), for example by varying the width l of the overlap area (110) between the said dish (4) or its outer projection (48) and the inner
20 edge (51) of the said peripheral strip (5) - see Figure 9b, such that F is greater than mechanical forces or stresses F_0 applied to the lid during use between when it is manufactured and when it is finally used. Typically, the value of F is approximately equal to $2 \times F_0$, and all
25 that is necessary to separate the two elements (4) and (5) is to apply a deliberate (manual or mechanical) separation force equal to at least F .

According to the invention, and particularly as a function of the nature of the packaged product or the

sealing or permeability requirements for the lid, a closer (9) may cover or close at least the said orifice (43), the said closer (9) typically being a closer made of a barrier material for the said product, the said closer (9) typically heat sealed to the said lid (1), has to be removed or torn off the first time that the said lid (1) is opened. Many Figures (see Figures 8b, 8c, 9c, 11a, 11b, 12a and 12b) illustrate the case of lids fitted with closers. It should be noted that these figures may include means or elements, that may be present independently of closers.

The said closer (9) may be a closer heat sealed on the inner surface (13) of the said lid and extends beyond the said dish and seals the said junction area (11) between the said dish (4) and the said peripheral strip (5). For example, see Figures 8c, 9c.

In this case, and as illustrated for example in Figure 9c, the said closer (9) may comprise at least one line of weakness (90) typically running along the said orifice, such that when manual pressure is applied on the said closer (9) at the time of the first opening, for example with the said instrument, the said closer (9) tears so as to provide access to the said product, the said torn off closer folding inside the said body.

As illustrated in Figures 8b and 14b, the said closer (9) may be a heat sealed closer on the upper surface of the lid and typically on the surface (441) of the said inner projection (440), the said closer

comprising a gripping tab (91) that is typically used to separate the closer (9) from the lid (1).

Thus, according to the invention, it is possible to have a lid (1) with two sealing levels: an "absolute" seal can be achieved during storage of the packaged product (for example a paint rich in volatile solvents) using an aluminium sheet closer to cater for a variable storage duration or variable storage conditions, while after the closer has torn at the time of the first opening, the seal will be made by the cap but possibly to a lesser degree because once paint pots or buckets have been opened, they will be used within a fairly short time.

Thus, according to the invention, considering the possibility of using a closer and particularly when the paints are aqueous dispersions, it is possible to have a cap with a much lower quality seal that simply forms a mechanical obstacle to prevent any foreign body from getting into the paint, such that the extra cost necessary for the closer (9) can be compensated by a more economic production of the assembly formed by the dish (4) and the cap (6).

According to the invention, at least the said dish (4) may be composed of a moulded or thermoformed part made of a thermoplastic material, typically PE, PP, PET, PVC or PA, chosen with a nature and thickness to have firstly the mechanical properties and secondly gas barrier properties required for use and an adapted chemical resistance to the said product.

The lids according to the invention are applicable to any type of receptacle body (2). The said outer edge (50) of the said peripheral strip (5) may have a profile capable of cooperating with the said upper rim (23) of the said receptacle (2) to be closed, typically by crimping, heat sealing or force fitting, the said upper rim (23) being either a plane rim (230, 233), or an inclined rim (231, 234), or a rolled rim (232, 235), the said plane, inclined or rolled rim possibly being inside or outside the said skirt, the said outer edge (50) typically comprising a seal or a sealing layer (54) to make a seal between the said lid (1) and the said body (2).

As illustrated in Figure 3c, the said outer edge (50) of the said peripheral strip (5) may have a profile capable of cooperating with an intermediate part (24) assembled to the said upper rim (23) of the said body (2).

See Figures 1a to 1g for illustrations of profiles of upper rims (23) of receptacle bodies (2).

See Figures 2a to 2b and 3a to 3c for illustrations of the sealed cooperation between these upper edges (23) and the outer edges (50) of the peripheral strips (5).

According to one advantageous embodiment of the invention, a manual gripping means (14) may be fixed to the said lid (1), to the said dish (4) or to the said peripheral strip (5) so that there is no longer any need for a handle fixed to the said receptacle as is usually the case for 2-litre or larger pots or buckets.

It is even more advantageous if this gripping means is formed using another means already present in the lid, for example the stacking means (8) as illustrated in Figures 12a to 12c, which show that the auxiliary
5 stacking means (80) fixed to the dish (4) comprises a gripping ring (800) through which one or several fingers can pass. This gripping means (14) may obviously be in many different forms, the embodiment shown in Figures 12a to 12c simply being an example.

10 Another purpose of the invention consists of a receptacle for which the body (2) is closed by a lid (1) according to the invention.

Example embodiments

15 Figures 2a to 14c form example embodiments of lids (1) according to the invention.

The lids according to Figures 7a to 8c and 13a were made from PE by moulding. The "dish (4) and peripheral strip (5)" assembly were moulded separately. However, in
20 the case of the lid (1) in Figure 8a, the lid assembly including the cap (6) was also moulded.

For lids according to Figures 9a to 12b and 14a to 14c, the peripheral strips (5) were firstly made from stainless steel for paint pot lids, comprising an inner
25 coating (usually a varnish) and an outer coating forming a décor or printing. These peripheral strips (5) were obtained by cutting and shaping, particularly by stamping, using strip or shaped material.

These peripheral strips were made particularly using standard lids made of steel according to the state of the art, and cutting out the area S' corresponding to the dish (4).

5 A series of lids (1) was thus made by cutting out the same surface area S' from a series of lids with different shapes and dimensions, and assembling with the same dish (4) to obtain a complete series of lids (1) as illustrated in Figures 9d, 10a and 10b.

10 According to the three methods of assembly of the peripheral strips (5) and dishes (4) (as shown for example in Figures 9a to 9c) these peripheral strips (5) were formed preferably using multi-layer materials comprising inner and / or outer coatings that can be
15 sealed on PE so that there is no need for a special adhesive layer.

Furthermore, different types of dishes (4) were manufactured in which the cap could be built in (see Figure 9b) by moulding PE.

20 If the cap (6) forms a separate part, it is then made separately and assembled by simple axial click fitting as can be seen in Figures 7b, 11b and 12a, which is advantageous in terms of production cost.

25 However, in the case of the assembly shown in Figure 9a, the inner edge (51) of the peripheral strip (5) is inserted into the mould so as to form the dish by insert moulding of the inner edge (51). In this case, there is no need for the dish to form an outer projection (48) - embodiment not shown in the Figure.

In the cases shown in Figures 9b and 9c, the inner edge (51) was heat sealed by axial pressure with heating jaws, onto or under the outer projection (48) of the dish (4).

5

Advantages of the invention

The lids (1) according to the invention have very many advantages, firstly because they simultaneously solve the many problems encountered by paint users, and
10 in particular offer the following for every receptacle body (2) closed by these lids (1):

- a dish (4) forming a "retention tank" surrounding the orifice, so as to limit risks of losing paint and causing drips, the two usually being related,
- 15 - a removable cap (6) typically fixed to the lid so that it cannot get lost,
- a pouring spout (41) integrated into the said dish to avoid paint runs onto the body of the receptacle,
- 20 - a means of stacking pots leading to stable stacks, to limit the floor occupancy of paint pots,
- a means of preventing runs from the cap in the open position,
- a means of wiping brushes, and rollers,
- 25 - a means of temporary support for these brushes,
- a means of recycling lids.

Furthermore, these lids also have advantages for the manufacturer and designer of lids and packagings for conditioning of paint, namely:

- adaptation of these lids (1) to any type of receptacle body,
- adaptation of these lids (1) to any type of product contained in the pot, to achieve the required seal during storage and / or during use,
- 5 - high speed industrial manufacturing on a production line simplified by its modular aspect, by axial assembly of the elements making up the lid (1),
- 10 - stacking of the lids (1),
- the possibility of manufacturing a large number of lids (1) with different dimensions and shapes starting from a single model of a dish (4) and cap (6),
- 15 - the possibility of incorporating a variable number of means that solve user problems, as a function of the order of priority of these problems, which can vary depending on the country or the continent,
- 20 - the possibility of having a completely renewed offer in a relatively traditional domain by varying the appearance of the lid, or having the possibility of offering lids (1) in which the high technology used is clearly visible, for marketing,
- 25 which is very advantageous in a particularly consumer-oriented domain in which a product is purchased not only as a result of technical considerations about the content, but also

depending on the visual aspect or technical performances of the container.

List of marks

5	Lid	1
	Hinge between 6 and 4 or 5	10
	Junction between 4 and 5	11
	Overlap area.....	110
	Average plane of 5 - horizontal	12
10	Lower surface of 1	13
	Manual gripping means	14
	Vertical axis perpendicular to 12	15
	Receptacle body	2
	Bottom	20
15	Hollow outer part.....	200
	Support edge - crimping bead.....	201
	Skirt	21
	Upper opening	22
	Upper rim - cooperates with 50	23
20	Plane outer rim.....	230
	Inclined outer rim.....	231
	Rolled outer rim.....	232
	Plane inner rim.....	233
	Inclined inner rim.....	234
25	Rolled inner rim.....	235
	Intermediate part	24
	Rolled rim.....	240
	Seal	25
	Sealing layer	26

	Stack of lids 1	3
	Dish of 1	4
	Sidewall	40
	"Top" part	400
5	"Bottom" part	401
	Radial stop	402
	Slide	403
	Recess at bottom of wall for 69	404
	Recess cooperating with 600	405
10	Pouring spout	41
	Inclined inner surface	410
	Upper end	411
	Bi-stable tab	412
	Bottom	42
15	Inclined bottom	420
	Orifice - recess of 42	43
	Main part	430
	Secondary part	431
	Rim of 43	44
20	Inner projection	440
	Upper surface of 440	441
	Click fit means - cooperates with 65	45
	Female part	450
	Wiping bar	46
25	Grid	47
	Outer projection	48
	Upper surface	480
	Lower surface	481
	Support plate	49

	Lateral orifice.....	490
	Peripheral strip of 1.....	5,5',5"
	Outer edge - cooperates with 23	50
	Inner edge (cooperates with 4 - 49)	51
5	Click fit hook of 50	52
	Crimping hook of 50	53
	Seal of 50	54
	Sealing layer of 50	55
	Removable closing means - cap	6
10	Fixing means	60
	Vertical positioning means of 6.....	600
	Single piece flexible tab with 4,5,8.....	61
	Flexible tab assembled to 4 or 5 or 8	62
	Rigid arm assembled to 4 or 5 or 8	63
15	End of 62 or 63	64
	Click fit means - cooperates with 45	65
	Male part.....	650
	Inner surface	66
	Gripping means - tab	67
20	Annular seal	68
	Cap - drawer sealing means cooperates	
	with 403	69
	Handle	690
	Horizontal positioning means - stop	7
25	Horizontal plane of cap 6	70
	Stacking means-thickness shim formed by 400..8	
	Auxiliary stacking means - pad or element in	
relief	80
	Gripping means - ring.....	800

	Radial stop	82
	Arm or tab fixing to the cap 6	83
	Sealing layer	84
	Arm or tab fixing to the dish 4	85
5	Closer	9
	Line of weakness	90
	Gripping tab	91